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=> d his

     (FILE 'HOME' ENTERED AT 11:10:58 ON 29 SEP 2003)
     FILE 'CA' ENTERED AT 11:11:09 ON 29 SEP 2003
L1 178217 S (OXYGEN OR O2 OR O)(6A)(DETECT? OR DETERMIN? OR MEASUR? OR MONITOR?
          OR ASSAY? OR ANALY? OR ASSES? OR TEST? OR ESTIMAT? OR EVALUAT? OR
          SENSE# OR SENSING OR SENSOR OR PROBE# OR PROBING OR QUANTITAT? OR
          QUANTIF? OR EXAMIN? OR CHECK?)
L2    209 S L1 AND FLAME(2A)PHOTOM?
L3   4805 S L1 AND(FLUE OR EXHAUST OR STACK(1A)(GAS? OR VAPOR))
L4      4 S L2 AND L3
L5    738 S L1 AND FLAME(2A)(DETECT? OR MONITOR? OR SENSOR OR SENSE OR SENSING)
L6     45 S L3 AND L5
L7     24 S L2 AND(REALTIME OR REAL TIME OR ONLINE OR LINE)
L8     96 S L5 AND(OPTICAL OR PHOTOMET?)
          E ABBASI H/AU
L9     42 S E3-4,E6-8
          E RUE D/AU
L10    29 S E3-6
L11     8 S L9 AND L10
L12     9 S L9-10 AND FLAME
L13   196 S L4,L6-9,L11-12
L14   186 S L13 NOT PY>2001
L15    69 S L14 NOT(GLASS OR CYCOM OR URINE OR CHROMATOG?)
L16   117 S L14 NOT L15
L17    52 S L16 AND L1/TI,IT,ST
L18    65 S L16 NOT L17
L19     8 S L18 AND(ACHEMA OR(COMBUSTION OR FIELD OR THERMAL)/TI)
L20   121 S L15,L17
L21    73 S L20 NOT(GAS CHROMATOG? OR NUCLEAR)
L22    48 S L20 NOT L21
L23     3 S L22 AND(INTRUSIVE OR PREMIXED)
L24    84 S L19,L21,L23

=> d bib,ab 1-84 l24

L24  ANSWER 6 OF 84  CA  COPYRIGHT 2003 ACS on STN
AN   135:21908  CA
TI   Low NOx pulverized solid fuel combustion process and apparatus
IN   Rabovitser, Iosif K.; Knight, Richard; Khinkis, Mark J.; Abbasi, Hamid A.;
     Wohadlo, Stan
PA   Institute of Gas Technology, USA
SO   U.S., 10 pp.
PI   US 6244200        B1   20010612       US 2000-591734   20000612
PRAI US 2000-591734         20000612
AB   In a method and app. for low-NOx combustion of a pulverized solid fuel,
     combustion products from a partial oxidn. combustor are mixed with a
     pulverized solid fuel, thereby preheating the pulverized solid fuel and
     resulting in devolatilization of at least a portion of the pulverized solid
     fuel.  The preheated pulverized solid fuel and the devolatilization products
     are then burned in a burner firing directly into a combustion chamber.

L24  ANSWER 7 OF 84  CA  COPYRIGHT 2003 ACS on STN
AN   133:61197  CA
TI   Flame monitoring method and device in combustion of hydrocarbon fuel
IN   Forbes, Stewart; Powell, Brian
PA   Forney Corporation, USA
SO   Jpn. Kokai Tokkyo Koho, 11 pp.
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PI JP 2000180363 A2 20000630 JP 1999-356015 19991215
GB 2344883 A1 20000621 GB 1998-27719 19981216
US 6247918 B1 20010619 US 1999-438781 19991112
PRAI GB 1998-27719 A 19981216
AB The device used for **monitoring flame**, includes a **sensor** for reacting to electromagnetic radiation discharged from the flame of transient species (e.g., OH, CH) having narrow wave length, sensor for reacting to electromagnetic radiation discharged from the flame of each non-transient species (e.g., H2O, CO2) having narrow wave length, resp., and a CPU for processing the outputs from the sensors to obtain air-fuel ratio, for stoichiometry of combustion process to improve combustion efficiency and decrease pollution.

L24 ANSWER 11 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 130:342179 CA
TI Industrial combustion monitoring using **optical** sensors
AU Von Drasek, William; Charon, Olivier; Marsais, Olivier
CS American Air Liquide, Countryside, IL, 60525, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1999), 3535(Advanced Sensors and Monitors for Process Industries and the Environment), 215-225
AB With more strict environmental regulations, optimizing the combustion process to reduce pollutant emissions and increase fuel efficiency is a major objective for manufacturers. Promotion of oxy-fuel (substitution of air with high purity O2) combustion is one alternative technol. demonstrated as a way for manufacturers to meet their environmental objectives. Despite the benefits oxy-fuel combustion can offer, further optimization using monitoring and control techniques is still needed. A novel method to monitor and control oxy-fuel burners by strategic placement of **optical** sensors is discussed. Sensors are integrated into an industrial oxy-fuel burner capable of withstanding harsh environments. Radiation from the flame at selected wavelength regions is collected by fiber optics attached to the burner and transported to a miniaturized personal computer-based spectrometer. Spectral information obtained is used to construct a neural network (NN) model that relates the real-time signal collected to burner operating parameters such as, stoichiometry, power, and fuel and/or oxidizer changes. This processed information from the NN can be used in a control-loop to adjust and optimize combustion parameters or alert operators of potential burner problems. Examples of this technol. on Air Liquide's pilot furnaces in the US and France and from an industrial glass melting tank are presented. The potential of the sensor and NN approach is demonstrated for conventional (pipe-in-pipe) burner and an advanced wide flame burner. Results showed that stoichiometry and power changes can reliably be detected using **optical** sensors. In addn., an example demonstrating the method on oxy-fuel oil **flames** to **monitor** oil atomization quality and stoichiometry is presented.

L24 ANSWER 17 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 129:291764 CA
TI Real-time prediction of hydrocarbon emissions from liquid combustion systems
AU Barton, Robert G.; Riale, Michael; McCampbell, David; VanDyne, Michele
CS Midwest Research Institute, Kansas City, MO, 64110, USA
SO Proceedings, Annual Meeting - Air & Waste Management Association (1997), 90th, MP1103/1-MP1103/18
AB A lab. study was conducted to investigate the ability of heuristic computational techniques to predict hydrocarbon emissions using data from simple process and **optical** monitors. A mini-pilot scale combustion research facility located at Midwest Research Institute was used was used in the

study. The facility's operational and emissions characteristics have been well defined in previous studies. The facility was fired with fuel oil and operated at wide range of combustion conditions. All operating parameters including fuel feed rate, air feed rates and chamber temp. were monitored. In addn., a CCD-array video camera was used to **monitor** the **flame**. An array of conventional continuous emissions **monitors** for CO, CO2, **O2**, and THC sampled the **exhaust** gases. The operational data and the **optical** field data were combined with the emissions data to form a training data set for a neural network. The trained network was then used to predict the THC emissions.

L24 ANSWER 18 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 128:63726 CA
TI **Quantitative measurement** of **oxygen** in microgravity combustion
AU Silver, Joel A.
CS Southwest Sciences, Inc., Santa Fe, NM, USA
SO NASA Conference Publication (1997), 10194(Fourth International Microgravity Combustion Workshop, 1997), 293-298
AB A **quant**. non-intrusive **measurement** of mol. **O2** in a flame sheet under normal gravity conditions was carried out using continuous spatial scanning technique with a collimated laser beam (~1 mm diam.) that linearly traverses the flame region (~4 cm long, out of a total **optical** path length of 31 cm). Contributions from O2 in non-flame regions were calcd. and subtracted. Despite an outstanding overall system performance (using a CH4 flame), the signal-to-noise ratio at each data point is relatively poor. Drop-tower microgravity tests of the equipment, using combustion of a cellulose sheet, are planned. The results can have application in development of fire detection systems aboard microgravity-environment space vehicles.

L24 ANSWER 30 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 124:92174 CA
TI Dual-flame mode FPD for continuous determination of total sulfur content in fuel gas
AU Machino, Akira
CS Fundamental Technol. Res. Lab., Tokyo Gas Co., Ltd., Tokyo, 105, Japan
SO Sekiyu Gakkaishi (1996), 39(1), 47-50
AB A dual-flame-mode **flame photometric detector** (FPD) with two combustion chambers was developed to overcome problems assocd. with quenching of sample response by the presence of hydrocarbon background in the flame for continuous detn. of total sulfur content in fuel gases. To det. the optimum conditions in the combustion chambers for anal. of fuel gas, the effects of flow rate of H2 and **O2** gases was investigated for the **detn**. of tetrahydrothiophene in methane (as model sulfur-contg. fuel gas mixt.). The repeatability of 5 runs was 5.2%, with a min. detection limit of 14 mg/3 (at signal-to-noise ratio ≥2:1).

L24 ANSWER 32 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 122:150347 CA
TI Intracavity laser spectroscopy of **flames**. **Detection** of **oxygen** atoms.
AU Cheskis, S.; Kovalenko, S.A.
CS Sackler Faculty of Exact Sciences, Tel Aviv University, Tel Aviv, 69978, Israel
SO Proceedings of SPIE-The International Society for Optical Engineering (1994), 2124(Laser Techniques for State-Selected and State-to-State Chemistry II), 145-51
AB The abs. concn. of at. oxygen in atm. pressure hydrogen/air flame was measured using intracavity laser spectroscopy based on a dye laser pumped by an argon-ion laser. Absorptions at the highly forbidden transitions at

630.030 and 636.380 nm were obsd. at an equiv. **optical** length of up to 10 km. The relatively low intensity of the dye laser avoids photochem. interferences that are inherent to some other methods for **detecting** at. **oxygen**. Detection sensitivity is ~6 × 1014 atom/cm3 and can be improved with better flame and laser stabilization.

L24 ANSWER 38 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 117:32717 CA
TI Toxic vapor continuous monitoring system
AU Yuen, David Y. H.; Gavin, Edward L.; Brand, Frank
CS Ralph M. Parsons Co., Pasadena, CA, 91124, USA
SO Advances in Instrumentation and Control (1991), 46(1), 647-54
AB The design and application of a toxic vapor continuous monitoring system if described for rapid detn. of low ppb concns. in air of certain organophosphoroesters and organophosphorofluorides that have been designated serious health hazards to occupational workers by OSHA. These compds. are used as intermediates in manufg. pesticides and insecticides. The system utilizes a very sensitive UV FPD (**flame photometric detector**) analyzer which is designed to **measure** the concn. of H-P-**O** species produced by chemiluminescence in a H-enriched flame. Analyzer output signal is continuously recorded, and when output signals reach alarm levels, alarm horns and beacons are actuated, and alarm events are displayed and are printed out on hard copy.

L24 ANSWER 48 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 113:11404 CA
TI Nitrous oxide **field** study
AU Clayton, R.; Sykes, A.; Machilek, R.; Krebs, K.; Ryan, J.
CS Southeast Reg. Off., Acurex Corp., Research Triangle Park, NC, USA
SO Report (1989), EPA/600/2-89/006; Order No. PB89-166623, 90 pp. Avail.: NTIS From: Gov. Rep. Announce. Index (U. S.) 1989, 89(12), Abstr. No. 932,655
AB The results of measurements of N2O emissions from coal-fired utility boilers at 3 elec. power generating stations are given. Continuous emission **monitoring measurements** were made for NO, **O**, CO2, and CO. **Online** N2O measurements were made using a gas chromatograph (GC) with electron capture detection. **Online** SO2 levels were measured on 1 unit using a GC with **flame photometric detection**. Stainless steel sample containers were used to collect **flue** gas samples for the evaluation of N2O formation as a function of time in the presence of NO, SO2, and water. The N2O **online** results were from not detectable to 4.6 ppm. The results did not exhibit apparent differences related to different boiler types and load conditions.

L24 ANSWER 52 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 108:136887 CA
TI Real-time monitoring of a hazardous waste incinerator with a mobile laboratory
AU Nolen, Sharon L.; Ryan, Jeffrey V.; Bridge, Richard, Jr.
CS EPA, Research Triangle Park, NC, USA
SO Proceedings - APCA Annual Meeting (1987), 80th(Vol. 2), 87/23.5, 13 pp.
AB The field test of a mobile lab. indicated that the mobile lab. was successfully operated to produce quality data in real-time monitoring of hazardous waste incinerator emissions. The lab. contained continuous **monitors** for CO, CO2, NOx, **O2**, SO2, and HCl and a GC app. with a **flame** ionization **detector** and a mass spectrometer for org. vapors.

L24 ANSWER 53 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 103:180658 CA
TI Organic emissions in coal **combustion** in relation to coal structure and

combustion temperature
AU Bruinsma, Odulphus S. L.; Verhagen, Everhardus J. H.; Moulijn, Jacob A.
CS Inst. Chem. Technol., Univ. Amsterdam, Amsterdam, 1018 WV, Neth.
SO Fuel (1985), 64(10), 1468-75
AB The pulsed combustion of coal has been studied in a small fluidized-bed reactor. The effect of combustion temp. and coal rank on the org. compn. of the off-gas was investigated. Results are presented for the combustion of an anthracite, a medium-volatile bituminous coal and a high-volatile bituminous coal at 700, 800 and 900°. The anal. techniques used include on-line Fourier-transform IR **O monitoring**, gas chromatog. with **flame**-ionization **detection** and off-line mass spectroscopy using Tenax as adsorbent. About 120 hydrocarbons were found, of which over 80% have been identified. Overall combustion characteristics such as O consumption, total amt. of unburned hydrocarbons and swelling properties of the coal have been related to the compn. of the org. substances in the off-gas. The distribution of the polycyclic aroms., from benzene to chrysene, and of alkylated derivs. is discussed in detail. **O**-contg. compds. have also been **analyzed**, although detailed discussion would be premature.

L24 ANSWER 61 OF 84 CA COPYRIGHT 2003 ACS on STN
AN 85:86799 CA
TI **Flame photometric detector** employing **premixed** hydrogen and **oxygen** gases
IN DeLew, Richard B.
PA Varian Associates, USA
SO U.S., 4 pp. Division of U.S. 3,879,126.

PI	US 3955914	A	19760511	US 1975-541320 19750115
	US 3879126	A	19750422	US 1973-389614 19730820
PRAI	US 1972-232926		19720308	

AB A **flame photometric detector** for the detection of gas chromatog. effluents contg. S or P contains an improved burner for minimization of interfering light emission. H and O gases are **premixed** and flow through a 1st passage to the burner tip to produce a H-rich reducing flame. The chromatog. effluent flows through a 2nd passage to the outer part of the flame where the sample is burned at ~400°, i.e. optimum conditions for the analytes and nonoptimum conditions for the interferences (e.g. hydrocarbons). Thus detector dynamic ranges of 20 and 50 ppm SO2 were obsd. by using conventional and improved burners, resp. The flame continues even when the chromatog. column is removed.

=> log y
STN INTERNATIONAL LOGOFF AT 11:52:14 ON 29 SEP 2003

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	IS&R	L1	433	((436/136) or (436/171)).CCLS.	USPAT	2003/09/29 13:08
2	BRS	L2	174	422/62.ccls. and oxygen	USPAT	2003/09/29 13:09